

REMARKS

In the Claims:

Claims 2 – 33 remain in this application. Claims 2, 4, 6-8, 11, and 21 have been amended. Claim 1 has been canceled. New claims 28 – 33 have been added.

The Office Action Summary page of the Office Action indicates that claims 1-27 have been rejected. However, in the body of the Office Action, the Examiner has failed to reject claims 8-10. Applicants request that the Examiner either provide a reasoned rejection for claims 8-10 or withdraw the rejection.

Claim 2 has been amended into independent form and to include the limitations of the claim from which it formerly depended. Only the form of claim 2 has changed, the substance and meaning have remained unchanged.

Claim 11, while not rejected in the Office Action, has nonetheless been amended to recite limitations not previously recited in the claims. Claim 11, as amended, recites forming a trench between two gates, forming a spacer on the trench side of a first gate that extends from the top of the gate to the bottom of the trench, and forming a spacer on the non-trench side of the first gate that extends from the top of the gate to a discrete portion of high-K material. None of the references cited by the Examiner disclose such a method.

Rejections Under 35 U.S.C. 102(e):

Claims 12, 13, 17, 21, 22, 26, and 27 were rejected under 35 U.S.C. 102(e) as being unpatentable over Hobbs, et al. (US 6,300,202) (hereinafter “Hobbs”).

Claims 12, 13, and 17 depend from claim 11. As discussed above, claim 11 has been amended to recite limitations not present in the cited references. Thus claims 12, 13, and 17 also recite limitations not present in the cited reference.

The cited references fails to disclose forming a first spacer that extends into the trench to a position below the bottom surface of the first gate, as recited in amended claim 21. The only spacer disclosed in Hobbs does not extend into the trench (Hobbs, Figure 4).

Claims 22, 26, and 27 depend from claim 21. As discussed above, the cited references fail to disclose all limitations recited by claim 21. Thus claims 22, 26, and 27 also recite limitations not present in the cited reference.

Rejections Under 35 U.S.C. 103(a):

Claims 1-7 were rejected under 35 U.S.C. 103(a) as being unpatentable over Hobbs.

The cited reference fails to disclose or suggest forming spacers adjacent to gates after removing a metallic portion from a layer of high-k material, as recited in claim 2. To establish obviousness, all of the claim limitations must be taught or suggested by the prior art (MPEP 2143.03). Rather than disclosing forming spacers **after** removal of the metallic portion, Hobbs only discloses forming spacers **before** removal of a metallic material.

Hobbs discloses in Figure 2 that spacers are formed before removal of a metallic portion. No where does Hobbs disclose spacers formed after removal of a metallic portion. The section of Hobbs cited by the Examiner as disclosing such spacer formation, which states that forming, “narrow spacers 202 following gate etch beneficially prevents subsequent reaction of first gate electrode layer 102” provides no information on whether spacers are formed before or after removal of a metallic portion. Spacers formed after removal of a metallic portion (as recited in claim 2) and spacers formed after gate etch but before removal of the metallic portion (as shown in Figure 2 of Hobbs) both may be formed following gate

etch. Because both spacers – a spacer formed before trench formation, and a spacer formed after trench formation – cover the sides of the gate electrode, both spacers may provide protection from subsequent reaction of a gate electrode. Thus, the cited section of Hobbs is silent on whether the spacers are formed before or after removal of a metallic portion.

Because the cited section of Hobbs does not provide any information on whether the spacers are formed before or after removal of the metallic portion, and Hobbs elsewhere only discloses that the spacers are formed **before** removal of a metallic portion, Hobbs fails to disclose forming spacers after removal of a metallic portion.

The cited reference fails to disclose or suggest a spacer that extends from substantially a top surface of one of the gates to a bottom surface of a trench, as recited in claim 3. The only disclosure in Hobbs of a spacer is one that does not extend at all into the trench (Hobbs, Figure 4).

Claims 4-10 depend from claim 2. As discussed above, Hobbs fails to disclose or suggest all limitations of claim 2. Thus, Hobbs fails to disclose or suggest all limitations of claims 4-10.

Claims 14-16, 18, 23, 19, 24, 20, and 25 were rejected under 35 U.S.C. 103(a) as being unpatentable over Hobbs in view of, variously, Liou et al. (JP 2000036572) (hereinafter “Liou”), Dobson et al. (JP 2153082) (hereinafter “Dobson”), JP54024236, and/or Ota et al. (JP 2001213696) (hereinafter “Ota”).

Claims 14-16, 18, 19, and 20 depend from claim 11. As discussed above, Hobbs fails to disclose all limitations of claim 11. The other cited references fail to rectify this. Thus, the cited references fail to disclose or suggest all limitations of claims 14-16, 18, 19, and 20.

Claims 23, 24, and 25 depend from claim 21. As discussed above, Hobbs fails to disclose all limitations of claim 21. The other cited references fail to rectify this. Thus, the cited references fail to disclose or suggest all limitations of claims 23, 24, and 25.

Pursuant to 37 C.F.R. 1.136(a)(3), applicant(s) hereby request and authorize the U.S. Patent and Trademark Office to (1) treat any concurrent or future reply that requires a petition for extension of time as incorporating a petition for extension of time for the appropriate length of time and (2) charge all required fees, including extension of time fees and fees under 37 C.F.R. 1.16 and 1.17, to Deposit Account No. 02-2666.

Respectfully submitted,

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